Listing of All Claims

1. (Currently Amended) A method for sharing a decoder among a plurality of data streams comprising:

decoding data samples from a first data stream in said plurality of data streams, thereby putting the decoder in a first state when it last decodes said data samples from said first data stream;

storing N data samples processed from said first data stream in a decoder re-processing buffer before decoding data from one or more other data streams in said plurality; [[and]]

decoding data from one or more other data streams in said plurality, thereby putting the decoder in a second state; and

decoding again said N data samples stored in said decoder re-processing buffer to restore said decoder to [[a]] said first state ~~said decoder was in when it last decoded said data samples from said first data stream~~ prior to processing any new data samples from said first data stream.

2. (Currently Amended) The method as in claim 1 further comprising:

temporarily storing a plurality of accumulator values associated with said first data stream in an accumulator buffer; and

restoring said accumulator values prior to replaying said N data samples stored in said ~~replay~~ decoder re-processing buffer.

3. (Currently Amended) The method as in claim 2 wherein N accumulator values are stored in said accumulator buffer and associated with said first data stream.

4. (Original) The method as in claim 1 wherein said decoder is a forward-error correction ("FEC") decoder.

5. (Original) The method as in claim 1 wherein said decoder is a maximum likelihood decoder.

6. (Original) The method as in claim 1 wherein said decoder is a convolutional decoder.

7. (Original) The method as in claim 1 wherein said decoder is a Viterbi decoder.

8. (Original) The method as in claim 7 wherein N is a particular Viterbi trellis depth.

9. (Original) The method as in claim 1 wherein said data streams are from different satellite transponders.

10. (Original) The method as in claim 1 wherein said data streams are from different cable carriers.

11. (Currently Amended) A replay method of context switching a decoder comprising:

decoding a first set of data from a first data stream to generate a first plurality of decoded data, said decoder being in a first state after decoding said first set of data;

temporarily storing said first set of data in a buffer;

decoding other sets of data from one or more other streams, thereby putting the decoder in a second state after decoding said second set of data;

restoring said decoder to said first state by re-decoding said first set of data from said buffer; and

decoding a second set of data from said first data stream after said decoder is restored to said first state~~, said decoder being in a second state after decoding said second set of data~~.

12. (Original) The method as in claim 11 further comprising:

temporarily storing said second set of data in a buffer said second set of data being usable to restore said decoder to said second state after said decoder has decoded additional data from said one or more other streams.

13. (Original) The method as in claim 11 further comprising:

temporarily storing a plurality of accumulator values associated with said first data stream in an accumulator buffer; and

restoring said accumulator values prior to replaying said first set of data stored in said buffer.

14. (Original) The method as in claim 11 wherein said decoder is a forward error correction ("FEC") decoder.

15. (Original) The method as in claim 11 wherein said decoder is a Viterbi decoder.

16. (Original) The method as in claim 11 wherein said first and second data streams are transmitted from first and second transponders, respectively.

17. (Currently Amended) A system comprising:

an error-correction decoder for decoding data from a plurality of data streams;

data replay means for restoring said decoder to a state it was in when it previously decoded data from each respective data stream, before decoding new data from each respective data stream, wherein said data replay means comprises a replay buffer for temporarily storing pluralities of data from each respective data stream, said pluralities of data being usable by said replay logic to restore said decoder to a state it was in when it previously decoded data from each respective data stream.

18. (Canceled)

19. (Currently Amended) The system as in [[18]] claim 17 further comprising:

accumulator storage means for temporarily storing accumulator values associated with each respective data stream.

20. (Original) The system as in claim 19 wherein the number of accumulator values associated with each data stream are equivalent in number to a number of data samples from each data stream stored in said replay buffer.

21. (Original) The system as in claim 17 wherein said decoder is a Viterbi decoder.

22. (Original) The system as in claim 17 wherein said decoder is a Turbo Code decoder.

23. (Original) The system as in claim 17 wherein each of said data streams contains data from a different satellite transponder.

24. (Original) The system as in claim 17 further comprising:

one or more additional decoders for decoding a plurality of additional data streams; and

additional data replay logic for restoring said decoders to previous states when said decoders previously decoded data from each respective data stream, before said decoders decode new data from each respective data stream.

25. (Currently Amended) An integrated circuit (IC), said IC comprising:

a decoder for decoding data symbols from a first data stream among a plurality of input data streams and from one or more other data streams among the plurality of data streams, wherein the decoder is in a first state when the decoder last decodes data symbols from said first data stream, and wherein the decoder is in a second state when the decoder last decodes data symbols from said one or more other data streams among said plurality;

a decoder re-processing buffer for storing N data symbols processed from said first data stream before decoding data from one or more other data streams in said plurality; and

decoder re-processing logic to re-process said N data symbols stored in said decoder re-processing buffer and thereby restore said decoder to [[a]] said first state

~~said decoder was in when it last decoded said data symbols from said first data stream~~ prior to processing any new data symbols from said first data stream.

26. (Currently Amended) The integrated circuit as in claim 25 further comprising:

accumulator storage logic to temporarily store a plurality of accumulator values associated with said first data stream in an accumulator buffer; and

accumulator restoration logic to restore said accumulator values prior to replaying said N data samples stored in said ~~replay~~ decoder re-processing buffer.

27. (Currently Amended) The integrated circuit as in claim 26 wherein N accumulator values are stored in said accumulator buffer and associated with said first data stream.

28. (Previously Presented) The integrated circuit as in claim 25 wherein said decoder is a forward-error-correction ("FEC") decoder.

29. (Previously Presented) The integrated circuit as in claim 25 wherein said decoder is a maximum likelihood decoder.

30. (Previously Presented) The integrated circuit as in claim 25 wherein said decoder is a convolutional decoder.

31. (Previously Presented) The integrated circuit as in claim 25 wherein said decoder is a Viterbi decoder.

32. (Previously Presented) The integrated circuit as in claim 31 wherein N is a particular Viterbi trellis depth.

33. (Previously Presented) The integrated circuit as in claim 25 wherein said data streams are from different satellite transponders.

34. (Previously Presented) The integrated circuit as in claim 25 wherein said data streams are from different cable carriers.

35-38. (Canceled)